

REMARKS

By the present amendment, claims 1, 2, 4 and 6 have been amended to obviate the objections thereto and/or to further clarify the concepts of the present invention. Support for the claim amendments to claims 1 and 2 may be found on page 3, lines 3-10 and lines 30-31 and page 6, lines 2-7 of the subject specification. Claims 1-4 and 6 still are pending. Entry of these amendments are respectfully requested.

Claim 4 was objected to for being a multiple dependent claim which is dependent upon a multiple dependent claim. Claim 6 was objected to as being dependent upon a cancelled claim.

With regard to the former, it would appear that the Amendment dated February 26, 2004, inaccurately transcribed claim 4 as this claim was amended in Amendment dated November 17, 1999, to be dependent upon claim 1 or 2. As to the latter, claim 6 has been amended to be dependent upon claim 1. Withdrawal of the objections is respectfully requested.

Claims 1-3 were rejected under 35 USC § 103(a) as being unpatentable over the patent to Mori et al in view of the patent to Kawagoe et al. As before, it basically was

asserted that the cited Mori et al patent teaches Al-Si or Al-Si-Sn compositions with ranges for disclosed components overlapping those as claimed in independent claims 1 and 2 and which have the ratio of the short diameter to the long diameter as claimed. With regard to the claim limitation of the particle size greater than 10  $\mu\text{m}$ , it was asserted that (1) the comparative example teaches such particles and further that (2) the Mori et al patent teaches that these particles are undesirable in the specifically disclosed materials. From the latter statement (2), it was further presumed that such materials actually had been made by the inventors of the cited patent.

It was acknowledged in the rejection that the Mori et al patent does not teach the use of (a) HVOF flame spraying of applying the alloy and (b) surface roughening of the substrate by shot blasting. As to the former (a), it was alleged that the HVOF is a well known form of thermal spraying as taught by the Mori et al patent. As to the latter (b), the cited patent to Kawagoe et al was asserted to provide this deficiency. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

It is submitted that the amendments to claims 1 and 2 made herein help to distinguish these claims over the teachings of the cited patents, particularly the patent to Mori et al. More specifically, these amendments recite that, since a part of the Al-Si

powder does not melt during flame-spraying, the original structure of the powder remains in a portion of the flame-sprayed layer, in such a manner that the primary and eutectic Si particles remain in the flame-sprayed layer.

Particularly in this regard, the attention of the examiner is directed to the attached Table where the significance of this distinction is detailed by comparing Al-Si alloys according to (A) a conventional method, (B) the subject invention and (C) the Mori et al patent. The Mori et al patent refers to a cast Al-Si alloy at column 1, lines 22-40 and column 3, lines 28-31 as prior art and is therefore construed to avoid formation the unmelted Al-Si structure. The Mori et al patent further discloses at column 2, lines 29 and 30 that "Si is forcedly solid solubilized in Al matrix." Consequently, this is a principle of the disclosure of the Mori et al patent and is therefore an important teaching of the patent. It must be emphasized that this teaching of the Mori et al patent is contradictory to formation of the unmelted Al-Si structure in accordance with the present invention and as now recited in independent claims 1 and 2.

It is submitted that the above-noted teaching deficiencies of the Mori et al patent are not supplied by the cited Kawagoe et al patent. The Kawagoe et al patent discloses mixture of melted Cu alloy-structure and unmelted Cu-alloy structure. However, the Kawagoe et al patent teaches to leave a portion of the copper alloy, particularly Cu-Pb

Serial Number: 09/423,981  
Office Action dated 3/29/04  
Amdt. filed 8/30/04

alloy, unmelted so as to utilize the spherical Pb phase for enhancing the compatibility and therefore the patent does not teach to leave a portion of the Al alloy unmelted. The Kawagoe et al patent therefore does not disclose to utilize the primary and eutectic Si for enhancing the load resistance.

The load resistance herein generally means that  $d/L$ , in which a bearing is subjected to load ( $L$ ) of the shaft at true contact area and deforms by an amount ( $d$ ). Since the elastic coefficient is expressed by stress/strain, the load resistance is inverse value of the elastic coefficient. When the load resistance is low, the bearing greatly deforms under load so that the fatigue may occur. In addition, seizure is liable to occur because of deformation and fatigue.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 103(a) and allowance of claims 1 through 3 as amended over the cited patents are respectfully requested.

In view of the foregoing, it is submitted that the subject application is now in condition for allowance and early notice to that effect is earnestly solicited.

Serial Number: 09/423,981  
Office Action dated 3/29/04  
Amdt. filed 8/30/04

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

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Enclosure: Table



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